

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-13 are pending in the above-identified application, claims 1, 9, 10, and 12 having been amended by the present amendment. Applicant respectfully submits that support for amended claims 1, 9, 10, and 12 is self-evident from the originally-submitted disclosure, including the original claims and drawings. Thus, no new subject matter is introduced by the present amendment.

The Office Action rejected claims 1-3 and 9-13 under 35 U.S.C. § 112, second paragraph, as indefinite. Claims 1, 2, 4, 5, 9, and 10 were rejected under 35 U.S.C. § 102(b) as anticipated by Yoshimura (U.S. Patent No. 4,796,963). Claims 2, 3, 6-8, and 11-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yoshimura in view of Tachibe et al. (U.S. Patent No. 6,195,190; hereinafter "Tachibe").

In response to the rejection of claims 1-3 under 35 U.S.C. § 112, second paragraph, independent claim 1 is amended by the foregoing amendment to recite, in relevant part, "[a]n optical scanning device comprising: a light source; a first optical system; a second optical system; and a mechanical deflector." Thus, Applicant respectfully submits that the Examiner's concerns regarding claim 1 are sufficiently addressed, and respectfully requests reconsideration and withdrawal of the rejection of claims 1-3 under 35 U.S.C. § 112, second paragraph.

Regarding the rejection of claims 9-13 under 35 U.S.C. § 112, second paragraph, the present amendment amends claims 9, 10, and 12 as suggested in the Office Action at pages 2 and 3. Therefore, Applicant respectfully submits that the Examiner's concerns regarding claims 9, 10, and 12 are sufficiently addressed, and respectfully requests reconsideration and withdrawal of the rejection of claims 9-13 under 35 U.S.C. § 112, second paragraph.

Regarding Yoshimura, Applicant respectfully submits that this document fails to anticipate claims 1, 2, 4, 5, 9, and 10. For example, amended claim 1 recites, among other features:

...said mechanical deflector is directly mounted to said housing, and material of said housing has heat conductivity smaller than that of a part of said mechanical deflector in contact with said housing so as to reduce heat transfer from the mechanical deflector to components of the first optical system and of the second optical system through the housing.

Referring to the non-limiting example of Applicant's Figure 5B, a polygon scanner 8 is directly mounted to a housing body 20A. The housing body 20A has a material with a heat conductivity smaller than a heat conductivity of a part of the polygon scanner 8 that contacts the housing body 20A (e.g., a mounting plate 8a). That is, for example, the mounting plate 8a conducts heat faster than the housing body 20A conducts heat. In this way, a temperature increase in other optical components of the optical scanning device can be reduced, as heat from the polygon scanner 8 is not easily transmitted to the housing body 20A.

Yoshimura does not teach each and every feature of amended claim 1. Yoshimura describes a rotary polygon mirror 52 that is indirectly connected to a housing 30 via a motor casing 56a and a flange 30.<sup>1</sup> Yoshimura further discloses that the housing 30 can be made of an "unsaturated polyester resin,"<sup>2</sup> and that the rotary polygon mirror 52 can be made of "glass or aluminum."<sup>3</sup> However, Yoshimura does not teach that "material of said housing has heat conductivity smaller than that of a part of said mechanical deflector in contact with said housing," as recited in amended claim 1. For example, although the rotary polygon mirror 52 of Yoshimura can be made of glass or aluminum, the rotary polygon mirror 52 is not a part of a mechanical deflector in contact with the housing 30. Instead, the motor casing 56a and the

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<sup>1</sup> Yoshimura at Figure 4 and at col. 4, line 57 – col. 5, line 15.

<sup>2</sup> *Id.* at col. 4, lines 24 and 25.

<sup>3</sup> *Id.* at col. 4, lines 58 and 59.

flange 30 contact the housing 30, but Yoshimura does not discuss the materials, let alone the heat conductivities, of the motor casing 56a and the flange 30. As Yoshimura fails to teach each and every feature of amended claim 1, Yoshimura fails to anticipate amended claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(b). Claims 2 and 3 depend from independent claim 1 and are also patentable over the art of record for at least the reason discussed above.

Further, there is no suggestion in the prior art to modify the teachings of Yoshimura to arrive at the features of amended claim 1 and therefore it is respectfully submitted that the prior art also fails to render obvious the present invention.

For example, Tachibe, which is cited as a secondary reference in the claim rejection under 35 U.S.C. § 103(a), depicts an optical beam scanning device including a polygon mirror unit 6 having an iron substrate 13, a motor 14, a polygon mirror 15, and a driving circuit including an integrated circuit 16.<sup>4</sup> Tachibe describes the casing 2 as being made of magnesium,<sup>5</sup> but does not describe any part of the polygon mirror unit 6 as (1) contacting the casing 2, and (2) having a heat conductivity greater than the heat conductivity of the casing 2. In fact, the heat conductivity of the casing 2 is intentionally set higher than the heat conductivity of the iron substrate 13 to draw heat away from the iron substrate 13.<sup>6</sup> As such, not only would Tachibe fail to remedy the deficiencies of Yoshimura with respect to claim 1, Tachibe actually teaches away from the feature “so as to reduce heat transfer from the mechanical deflector to components of the first optical system and of the second optical system through the housing,” as recited in amended claim 1.

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<sup>4</sup> Tachibe at Figure 2 and at col. 6, lines 56-59.

<sup>5</sup> *Id.* at col. 7, lines 22-25.

<sup>6</sup> *Id.* at col. 7, lines 18-20 and 53-58.

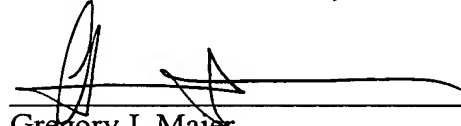
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Moreover, independent claims 4 and 9 recite features substantially similar to the above-discussed features of amended claim 1. Therefore, for at least the reasons discussed above with respect to amended claim 1, Applicant respectfully submits that claims 4 and 9 also patentably define over the art of record. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 4 and 9 under 35 U.S.C. § 102(b). Further, Applicant respectfully submits that claims dependent from independent claims 4 and 9 are also allowable for at least the reasons discussed above.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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